# DATA VALIDATION/USABILITY SUMMARY

February 2015
RCRA Groundwater Sampling
Metals and Wet Chemistry Parameters

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# Data Validation/Usability Report

## Groundwater Samples

FMC Corporation, Pocatello, Idaho

RCRA Groundwater Monitoring Program

First Quarter 2015

## SDGs 10297680 and 10298055

21 March 2015

Prepared by: Bruce K. Wallin, PhD

# 1. INTRODUCTION

This memo summarizes the Site Chemist's usability evaluation of the technically reviewed groundwater results generated by Pace Analytical Services, Inc., Minneapolis, MN (PASI-M) and Pace Analytical Services, Inc., Virginia, MN (PASI-V) for FMC's first quarter 2015 Resource Conservation and Recovery Act (RCRA) sampling event for the laboratory sample SDGs listed above. The samples were collected 24-26 February 2015. All samples were analyzed for elements and wet chemistries.

For elements, laboratory analyses were performed on all samples in accordance with the U.S. Environmental Protection Agency (USEPA) SW-846 Methods 6010B (cadmium, potassium, and phosphorus), 6020 (arsenic and selenium), and Method 300.0 for Chemical Analysis of Water and Wastes (MCAWW) for chloride, fluoride, nitrate, and sulfate; orthophosphate by SM4500P-E from Standard Methods for the Examination of Water and Wastewater, ammonia by MCAWW Method 350.1, and fluoride from wells providing evidence of interference in Method 300.0 were also analyzed by SM4500F-C. All of the above methods are hereafter referred to as "Methods". A list of the parameters and associated methods utilized is provided in Table 1. All parameters except phosphorus were analyzed by PASI-MN and phosphorus in selected samples was analyzed by PASI-V.

TABLE 1-1
FIRST QUARTER 2015 RCRA MONITORING EVENT-PARAMETERS AND ANALYTICAL METHODS

| PARAMETER | SM (1) METHOD | MCAWW(2) METHOD | SW-846(3) METHOD |
|---|---|---|---|
| | | | |
| Cd, P, and K | | | 6010B |
| | | | |
| As, Se | | | 6020 |
| | | | |
| ammonia - N | | 350.1 | |
| | | | |
| chloride | | | 9056A |
| | | | |
| fluoride | 4500-F-C | | 9056A |
| | | | |
| nitrate | | | 9056A |
| | | | |
| ortho-phosphate | 4500-P E | | |
| | | | |
| sulfate | | | 9056A |
| | | | |

NOTES:

(1) "Standard Methods for the Examination of Water and Wastewater",

(2) "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

(3) "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", Third Edition, November 1996 and subsequent revisions.

The data were technically reviewed based on method specifications, and laboratory-developed performance criteria by adapting the procedures set forth in the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, USEPA Office of Solid Waste and Emergency Response, EPA-540-R-04-004, October 2004, and USEPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review, Final, OSWER 9240.1-34, EPA540-R-00-006, June 2001 (Guidelines).

For all parameters, a Level III technical review was performed for these SDGs, which included a review/evaluation of all quality control summary forms. Raw data, preparation logs, instrument printouts, notebook records and forensic deliverables provided by the laboratory were not evaluated.

A detailed description and summary of these efforts is provided in the Technical Review Reports in Appendix A.

The following validation/usability report is the result of a collective assessment of all information associated with the analytical results available. The information includes the project-specific data quality objectives (DQOs) specified in the RCRA Interim Status Groundwater Monitoring Plan, as updated in the RCRA Post Closure Plans (FMC, 1999), as well as historical data, site knowledge, and the technical review results.

## 2. SUMMARY OF USABILITY ISSUES

The data technical review reports indicate which laboratory results are considered non-compliant when compared to the requirements set forth in the relevant documents. However, most of these exceptions are minor quality control problems and do not affect data usability. The cases where the exceptions may impact data usability are discussed in the following sections. In most cases these problems are typical analytical difficulties or are the result of sample matrix problems. A summary of data quality goals and observations is provided in Table 2-1.

### DATA USABILITY SUMMARY

***For SDG 10297680 sample 502131 was analyzed for fluoride by both the IC and ISE Methods. Dissimilar results were reported, therefore, only the result reported from the ISE Method should be used.***

***For SDG 10298055 samples 502156 and 502157 were analyzed for fluoride by both the IC and ISE Methods. Dissimilar results were reported, therefore, only the results reported from the ISE Method should be used.***

***For this event no additional data were considered unusable.***

TABLE 2-1 DATA QUALITY SUMMARY: FMC GROUNDWATER MONITORING PROGRAM
FIRST QUARTER 2015 RCRA SAMPLING EVENT

| DATA QUALITY INDICATOR | PURPOSE | METHOD OF MEASUREMENT & EVALUATION | GOAL | SUMMARY OF RESULTS |
|---|---|---|---|---|
| Precision | Reproducibility of results | 1. Collocated samples | S & D >5RL, RPD <30, S &/or D <5RL, S-D <2RL | *All criteria were met - no flagging was required or deemed necessary.* |
| | | 2. MS/MSD - Laboratory replicates | S & D >5RL, RPD <20, S &/or D <5RL, S-D <RL | *All criteria were met - no flagging was required or deemed necessary.* |
| Accuracy | Proximity of result to true value | 1. Calibration | Meet method/guidance criteria | *All criteria were met - no flagging was required or deemed necessary.* |
| | | 2. Laboratory control samples | Meet lab-developed or method criteria | *All criteria were met - no flagging was required or deemed necessary.* |
| | | 3. Matrix spikes/Serial Dilutions | Meet lab-developed or method criteria | *MS/MSD recoveries of chloride mixed. Regult for 502114 estimated (J).*<br>*MS/MSD recoveries 502114 arsenic high. Positive result flagged as estimated (J+).*<br>SDG 10298055 serial dilution selenium 11.4%. All results flagged as estimated (J) - low bias. |
| Representativeness | Sample integrity and sampling precision | 1. Collocated samples | S & D >5RL, RPD <30, S &/or D <5RL, S-D <2RL | *See item 1 above.* |
| | | 2. Blanks | Sample results ND or >5X blank | *Positive results for cadmium and ophosphate in some samples flagged as not-detected (U) due to blank contamination. Should be considered maximum potential concentrations.* |
| | | 3. Holding times | Per method | *No deviations requiring actions.* |
| | | 4. Preservation | Per method | *All criteria were met - no flagging was required or deemed necessary.* |
| Comparability | Consistent practices | Use of and adherence to appropriate analytical methods | Compliance with required USEPA methods | *Method compliance achieved, goal met for all samples.* |
| Completeness | Obtain intended information from the event | Comparison of planned vs usable data obtained | >90% of planned | *Completeness 100%* |
| Consistency | Expansion of historical database | Comparison with historical statistics | Meet completeness objective | *Modest outliers, no significant trends apparent. Continue evaluation.* |

# 3. DATA VALIDATION RESULTS

To determine the ultimate utility of data, the following indicators were evaluated:

## 3.1 PRECISION, ACCURACY, REPRESENTATIVENESS, COMPARABILIITY, COMPLETENESS AND CONSISTENCY

### 3.1.1 PRECISION

Precision is a quantitative determination of the reproducibility of an analytical value. For this program, collocated samples are collected to assess overall precision of the sampling, preparation and analytical process, and matrix spike/matrix spike duplicates are required to address aliquoting reproducibility in order to provide information on matrix reproducibility otherwise unobtainable from samples reported below the reporting limits. Matrix spikes also provide an indication of the accuracy of native results: this will be discussed in the accuracy section.

The collocated samples further address the ability to obtain a representative sample of the medium studied, this will be discussed further in the representativeness section. For elemental parameters, the methods require the preparation of laboratory replicates at a specified frequency to address aliquoting precision.

For laboratory replicates the Guidelines specify the utilization of difference criteria for samples providing values below a limiting value and relative percent difference (RPD) criteria for samples providing values above a limiting value. The Guidelines utilize 5X the contract required detection limit (CRDL). These specifications are as follows:

When either one or both of the analyses provide results below the limiting value, the following criteria apply:

$$|S - R| \leq CRDL$$

Where: S = sample value
R = replicate sample value

When both of the analyses provide results above or equal to the limiting value, the following criteria apply:

$$RPD = (|S - R|/S + R)200 \leq 20$$

Where: RPD = Relative Percent Difference

The QAPjP provides an RPD specification of 20 percent for laboratory replicates for elements, but does not provide specific criteria for low level results or collocated samples. The Guidelines do not provide precision criteria for collocated samples. The technical reviewer utilized the 20 percent RPD criteria specified in the QAPjP and Guidelines and the low-level criteria above specified in the Guidelines with the substitution of the laboratory reporting limit (RL) for the CRDL where they differed. For collocated samples, the technical reviewer utilized the 2 RL and RPD <30 criteria specified in the USEPA Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, June 13, 1988.

For this event all replicate sample precision was within specification.

For SDG 10297680 sample 502131 was analyzed for fluoride by both the IC and ISE Methods. Dissimilar results were reported, therefore, only the result reported from the ISE Method should be used.

For SDG 10298055 samples 502156 and 502157 were analyzed for fluoride by both the IC and ISE Methods. Dissimilar results were reported, therefore, only the results reported from the ISE Method should be used.

For this event the following are collocated samples:

| SDG | SAMPLE | COLLOCATED SAMPLE |
|---|---|---|
| 10297680 | 502173 | 502600 |
| 10298055 | 502104 | 502601 |

Note: All parameters were reported to standard laboratory reporting limits (PQL) which approximate estimated quantitation limits (EQL) specified in the methods. The technical reviewer utilized the PQL values to conduct the precision analysis.

For this event all collocated sample precision was within specification.

For all parameters, the laboratories reported to their practical quantitation limits (PQL) and for levels below the PQL to the method detection limit (MDL) flagged with a "J" qualifier. The MDL described in 40 CFR Part 136, Appendix B and incorporated by reference in SW-846, provides a precision of ± 100 percent. With some exceptions the PQL values used by the laboratory, approximate the estimated quantitation limit (EQL) which is established at approximately 5-10X the MDL in SW-846. At 5X the MDL the EQL precision is approximately ± 30 percent. As a result reported positive but below the PQL, but above the MDL should be considered estimates. ***The project manager is cautioned that the imprecision associated with the project-required reporting conventions must be taken into consideration when utilizing the data below the PQL.***

### 3.1.2 ACCURACY

Accuracy is the proximity of the reported analytical value to the true concentration in the sample. To estimate the proximity factor, laboratory control, laboratory blank and environmental samples are fortified with the parameter of interest, and for organics analysis, each sample is also fortified with surrogate indicators, and the level recovered, expressed as a percentage of the spiking level, is utilized. For laboratory control samples (LCS), the analytical values must be within either a published range or within laboratory or method established windows about the true concentration.

If these conditions are not met, the method is to be considered out of control, corrective action taken, and the entire process repeated with compliant LCS before the associated data can be reported. For elements, laboratory blanks are spiked with low-level reference materials for ICP (CRI). According to the Guidelines associated analytical values must fall within ± 20 percent of the true value or all the potential impact on all environmental sample results associated with the non-compliant CRI must be evaluated during technical review using professional judgment. The technical reviewer has considered that all associated sample results reported at values <2PQL are evaluated for CRI recoveries <80 percent, both positive results and non-detects are flagged as estimated with the potential for low bias (J-), and for CRI recoveries >120 percent, positive results only are flagged as estimated with the potential for high bias (J+).

For the recovery of spiked parameter from environmental samples, the quantity of parameter matrix spiked (MS) must be large enough to be uniquely distinguishable from the level of native analyte present in the sample. When this condition exists, if the recovery value is outside established values, all associated environmental samples are flagged as estimated (J) with an indication of bias direction during technical review. The Guidelines establish that the native level of analyte must be less than four times the spiking level for valid accuracy estimation.

The formula utilized is as follows:

Percent Recovery = ((SSC - USC)/CS))100

Where: SSC = Spiked Sample Concentration
USC = Unspiked Sample Concentration
CS = Concentration Spiked

For elements, the QAPjP establishes acceptance criteria at 70-130 percent that are less stringent than the 75-125 percent specified in the Guidelines. The QAPjP does not specify accuracy criteria for water quality parameters. The technical reviewer has utilized the laboratory-derived limits, as required by SW-846 methods, and the more stringent 75-

125 percent criteria specified in the Guidelines where laboratory-established limits were not provided for the water quality parameters.

For elements analyzed by ICP, the method requires assessment of matrix interference by performing serial dilution analyses in addition to the matrix spike indicated above. The Guidelines suggest that, for samples containing sufficient signal in the undiluted sample (>50IDL) that the diluted result should be within 10 percent of the undiluted value to verify absence of interference.

Initial and continuing calibrations are performed to verify instrument performance and stability prior to and during the analysis of environmental samples. The Methods require that the initial calibration linearity coefficients are $\geq$ 0.995, the continuing calibration stabilities are within 90-110 percent and, for elements, the Guidelines require consideration of blanks indicating a negative instrument drift >|IDL|. The technical reviewer has utilized the flagging criteria suggested in the Guidelines for lack of linearity and continuing calibration stability, and has utilized professional judgment for actions for non-compliant instrument drift associated with samples with levels reported at <5 IDL.

For SDG 10298055 sample 502114 provided MS/MSD recoveries of arsenic above the upper limit. The result reported for the element in the sample is flagged as estimated with the potential for high bias (J+). ***This result is considered usable when the bias factors are taken into account. Doing so will have no impact on the decision since the adjusted values are above the Standards.***

For SDG 10298055 sample 502114 provided an ICP serial dilution result 11.4% higher than the undiluted value. The results reported for this element in all environmental samples associated with the SDG are flagged as estimated (J) to signify the indication of low bias. ***These results are considered usable when the bias factor is taken into account. Doing so will have no impact on the decision since either the adjusted values are below or unadjusted values are above the Standards.***

For SDG 10297680 sample 502128 provided MS/MSD recoveries of chloride both above and below the lower limit. The results reported for this parameter in samples 502174, 502177, 502154, 502178, 502173, 502600, and 502147 associated with the batch are flagged as estimated with the potential for mixed bias (J). ***These results are considered usable when the bias factors are taken into account. Doing so will have no impact on the decision since no Standard is established for the parameter.***

For this event all additional accuracy criteria were met.

### 3.1.3 REPRESENTATIVENESS

To perform a valid environmental assessment, the samples, when analyzed, must be representative of the media under study. Factors influencing representativeness include preparation of wells prior to sampling to obtain aliquots of the groundwater strata of interest. This is accomplished through purging of standing water to constant temperature, conductivity and pH prior to collecting the sample. Collocated samples are also collected to provide information regarding the ability to reproducibly collect a sample. If reproducibility is not obtained, representativeness is not verified. The sample must be collected with uncontaminated equipment, placed in uncontaminated containers, and not contaminated throughout the transport, receipt, storage, preparation and analytical processes. Evaluation of the potential for contamination is conducted through collection of field blanks, and utilization of laboratory process blanks. Once the sample has been collected, it is maintained in such a state that changes are not expected to occur in its concentration of target parameters. This is accomplished by chemical and physical preservation, and minimization of time from collection to analysis.

A review of the sample receipt logs indicate that preservation requirements were met, therefore, no action was taken.

Blanks w ere reported with some parameters present at concentrations that generated action levels resulting in the flagging of the positive values reported for several samples

as not-detected (U) at the reported values. ***These results are considered usable as maximum potential concentrations.***

### 3.1.4 COMPARABILITY

The characteristic of comparability reflects both the internal consistency of measurements and the expression of results in units that are consistent with other organizations reporting similar data. Each value reported for a given measurement should be similar to other values within the same data set and with other related data sets. Comparability was assured through the use of standardized sampling procedures and USEPA analytical methods.

### 3.1.5 COMPLETENESS

Completeness is a measure of the extent of attainment of usable data points from an investigation. For this program a completeness goal of 85 percent is established in the QAPjP. The ability to obtain a sample, (human) error and sample characteristics are major contributors to reduced completeness. For this investigation, all intended samples were collected and received by the laboratory. The laboratory analyzed all of the samples for all of the intended parameters. Completeness for this event is, therefore, 100 percent.

### 3.1.6 CONSISTENCY

Consistency is a measure of the reasonableness of data to those that have been previously generated. For this program, an extensive data base has been developed that allows the evaluation of analytical results that may represent historical outliers. Based on a comparison to the historical results, a few sporadic differences were noted for this monitoring event; however, the overall results are within the existing variance.

# 4. REFERENCES


FMC, 1999. "RCRA Interim Status Groundwater Monitoring Plan", Bechtel Environmental, August 1999; as updated in the RCRA Post-Closure Plans as follows:

- Pond 9E post-closure plan, January 2000;
- Slag Pit Sump post-closure plan, September 2001;
- Pond 8E, Phase IV Ponds and Pond 15S post-closure plans, May 2002;
- Pond 16S post-closure plan, July 2003; and,
- Pond 17 and Pond 18 Cell A post-closure plans, August 2004.

USEPA, 2004. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, Final, USEPA, OSWER, EPA 540-R-04-004, October 2004.

USEPA, Contract Laboratory Program Statement of Work for Inorganics Analysis, Document Number ILM02.0 and latest revisions.

USEPA, 1989. Laboratory Data Validation Functional Guidelines for Evaluating Inorganics Analyses, USEPA Region I, June 13, 1988, Modified by Deborah Szaro, et. al. February 1989.

USEPA, 1983. Methods for Chemical Analysis of Water and Wastes, EMSL, EPA-600/4-79-020, Revised March 1983.

USEPA, 1986. Test Methods for Evaluating Solid Waste, OSWER, SW-846, Third Edition, November 1986.

# APPENDIX A

# TECHNICAL REVIEW REPORTS

**ENVIRONMENTAL CHEMISTRY CONSULTANTS, INC**

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Data Technical Review Report

**Groundwater Samples**

FMC Corporation, Pocatello, Idaho

East Michaud Flats RFI

First Quarter 2015

# SDGs 10297680 and 10298055

21 March 2015

Prepared by: Bruce K. Wallin, PhD

This memo summarizes the technical review of groundwater results generated by PASI-M for FMC's first quarter 2015 Resource Conservation and Recovery Act (RCRA) sampling event for the laboratory SDGs listed above. The samples associated with all SDGs were analyzed for elements and wet chemistries.

For elements laboratory analyses were performed in accordance with the U.S. Environmental Protection Agency (USEPA) SW-846 Methods, and for wet chemistries, methods from Standard Methods for Examining Water and Wastewater and Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, Revised March 1983. All of the above methods are hereafter referred to as "Methods". A list of the parameters and associated methods utilized is provided in Table 1-1.

# TECHNICAL REVIEW REPORT

# SDG 10297680

# ELEMENTAL PARAMETERS

**TECHINCAL REVIEW REPORT**

**SDG 10297680**

**ELEMENTAL PARAMETERS**

The data evaluation was based on USEPA SW-846 Method 6010B for cadmium and potassium, and 6020 for arsenic and selenium (Methods) and included the following parameters:

- calibration
- blanks
* - ICP interference check sample
- matrix spike analysis
- duplicate sample analysis
* - laboratory control sample analysis
* - ICP serial dilution analysis
* - ICPMS internal standard analysis
- detection limits
- overall assessment

* All criteria were met for this parameter.

Table A-1 summarizes the technical review actions that are detailed below.

Data validation, described in SW-846 and the Guidelines, which includes an evaluation of the usability of technically reviewed results with respect to project Data Quality Objectives and site chemistry knowledge, is included in the Data Validation/Usability Report.

BLANKS:

Blanks providing positive results and their associated action levels are tabulated below:

| BLANK ID. | ELEMENT | CONC. (mg/L) | ACTION LEVEL (mg/L) |
|---|---|---|---|
| CCB 3/2-10:24 | cadmium | 0.00027 | 0.0014 |
| CCB 3/2-11:15 | cadmium | 0.00025 | 0.0013 |
| CCB 3/2-12:11 | cadmium | 0.00027 | 0.0014 |
| CCB 3/2-13:12 | cadmium | 0.00037 | 0.0019 |

Associated samples with positive results reported below the action level:

| BLANK ID. | ELEMENT | ASSOCIATED SAMPLES |
|---|---|---|
| CCB 3/2-12:11 | cadmium | 502131 |
| CCB 3/2-13:12 | cadmium | 502131 |

Action:

- Associated sample result is flagged as not-detected at the reported value (U).

Comments:

Only calibration blanks bracketing the samples associated with the SDG were evaluated.

MATRIX SPIKE ANALYSIS:

Comments:

For the Method 6020 preparatory batch associated with samples 502127, 502124, 502126, 502149, 502148, 502147, 502180, 502172, and 502131 the laboratory included Batch QC matrix spike results. No action is taken since the Batch QC sample may not represent the matrix under study.

DUPLICATE SAMPLE ANALYSIS:

Comments:

For this SDG sample 502600 is collocated with sample 502173. For this collocated sample pair all precision limits specified in the QAPP were met.

DETECTION LIMITS:

For this SDG, the laboratory was required to report results to their method detection limit (MDL). The MDL (described in 40CFR Part 136, Appendix B and incorporated by reference in SW-846), provides an error band, by definition, of ± 100 percent. The Estimated Quantitation Limit (EQL), is established at 5-10X the MDL in SW-846.

Action:

- Positive results reported between the MDL and PQL are flagged as estimated (J).

Comments:

The data user is cautioned that these results may not be analytically reproducible or statistically valid.

OVERALL ASSESSMENT:

Calibration blanks were reported with cadmium present at concentrations that generated action levels resulting in the flagging of the positive result reported in sample 502131 as not-detected at the reported value (U).

Positive results reported below the PQL are flagged as estimated (J) due to uncertainty at the low level.

All additional QC results reviewed were within specification and no further actions or qualifiers were necessary.

**TABLE A-1.**

TECHNICAL REVIEW ACTION SUMMARY

SDG 10297680

| | |
|---|---|
| Arsenic | |
| Cadmium | J1, U1 |
| Potassium | |
| Selenium | |

If the field is left blank no actions or qualifications were necessary.

| | | |
|---|---|---|
| J1 | - | Positive result is flagged as estimated (J) due to uncertainty at the low level. |
| U1 | - | Positive result is flagged as not-detected (U) due to blank contamination. |

# TECHNICAL REVIEW REPORT

# SDG 10298055

# ELEMENTAL PARAMETERS

**TECHINCAL REVIEW REPORT**

**SDG 10298055**

**ELEMENTAL PARAMETERS**

The data evaluation was based on USEPA SW-846 Method 6010B for cadmium, potassium, and phosphorus and 6020 for arsenic and selenium (Methods) and included the following parameters:

- calibration
- blanks
* - ICP interference check sample
- matrix spike analysis
- duplicate sample analysis
* - laboratory control sample analysis
- ICP serial dilution analysis
* - ICPMS internal standard analysis
- detection limits
- overall assessment

* All criteria were met for this parameter.

Table A-2 summarizes the technical review actions that are detailed below.

Data validation, described in SW-846 and the Guidelines, which includes an evaluation of the usability of technically reviewed results with respect to project Data Quality Objectives and site chemistry knowledge, is included in the Data Validation/Usability Report.

CALIBRATION:

Low-level check standards (CRI) providing recoveries not within 90-110% are tabulated below:

| CRI ID. | ELEMENT | RECOVERY (%) |
|---|---|---|
| 3-6/08:21 | phosphorus | 112.4 |
| 3-6/09:32 | phosphorus | 127.2 |

Associated samples with positive results reported <2PQL: NONE

BLANKS:

Blanks providing positive results and their associated action levels are tabulated below:

| BLANK ID. | ELEMENT | CONC. (mg/L) | ACTION LEVEL (mg/L) |
|---|---|---|---|
| CCB 3-2/16:25 | cadmium | 0.00046 | 0.0023 |
| CCB 3-2/17:20 | cadmium | 0.00042 | 0.0021 |
| CCB 3-4/11:42 | cadmium | 0.00029 | 0.0015 |
| 502701 | arsenic | 0.00026 | 0.0013 |

Associated samples with positive results reported below the action level:

| BLANK ID. | ELEMENT | ASSOCIATED SAMPLES | | |
|---|---|---|---|---|
| CCB 3-4/11:42 | cadmium | 502114 | 502104 | 502601 |

Action:

- Sample results are reported as not-detected at the reported value (U).

Comments:

Only calibration blanks bracketing the samples associated with the SDG were evaluated.

MATRIX SPIKE ANALYSIS:

Samples providing matrix spike (MS)/MS duplicate (MSD) recovery or precision not within the laboratory default limits when the native level is reported at less than four times the spiking level are tabulated below:

| SAMPLE ID. | ELEMENT | MS/MSD RECOVERY (%) |
|---|---|---|
| 502114 | arsenic | 132/125 |

Action:

- For both MS and MSD recoveries above the upper limit positive result reported for the element in the sample is flagged as estimated with the potential for high bias (J+).

Comments:

Only the spiked sample result is flagged since the MS/MSD recoveries were compliant for the remainder of samples in the SDG batch.

For sample 502157 the native level of potassium exceeded four times the spiking level, therefore, the parameter could not be evaluated.

DUPLICATE SAMPLE ANALYSIS:

Comments:

For this SDG sample 502601 is collocated with sample 502104. For this collocated sample pair all precision limits specified in the QAPP were met.

ICP SERIAL DILUTION ANALYSIS:

Samples with concentrations reported >50 MDL providing 5X serial dilution values not within 10% (%D) are tabulated below:

| SAMPLE | ELEMENT | %D |
|---|---|---|
| 502114 | selenium | 11.4 |

Action:

- Sample results reported for the element are flagged as estimated (J).

Comments:

The above action is applied to all environmental samples associated with the SDG.

The diluted value was larger than the undiluted value therefore low bias is indicated

DETECTION LIMITS:

For this SDG, the laboratory was required to report results to their method detection limit (MDL). The MDL (described in 40CFR Part 136, Appendix B and incorporated by reference in SW-846), provides an error band, by definition, of ± 100 percent. The Estimated Quantitation Limit (EQL), is established at 5-10X the MDL in SW-846.

Action:

- Positive results reported between the MDL and PQL are flagged as estimated (J).

Comments:

The data user is cautioned that these results may not be analytically reproducible or statistically valid.

OVERALL ASSESSMENT:

A calibration blank was reported with cadmium present at a concentration that generated an action level resulting in the flagging of the positive results reported in samples 502114, 502104, and 502601 as not-detected at the reported value (U).

For sample 502114 the MS/MSD recoveries of arsenic were above the limits and the positive result reported in the sample is flagged as estimated with the potential for high bias (J+).

Sample 502114 provided an ICP serial dilution value for selenium that was 11.4% larger than the undiluted value. The results reported for this element in all environmental samples associated with the SDG are flagged as estimated (J).

Positive results reported between the MDL and PQL are flagged as estimated (J) due to uncertainty at the low level.

All additional QC results reviewed were within specification and no further actions or qualifiers were necessary.

**TABLE A-2.**

TECHNICAL REVIEW ACTION SUMMARY

SDG 10298055

| | |
|---|---|
| Arsenic | J1, J+1 |
| Cadmium | J1, U1 |
| Potassium | |
| Selenium | J1, J2 |
| Phosphorus | |

If the field is left blank no actions or qualifications were necessary.

| | | |
|---|---|---|
| J1 | - | Positive result is flagged as estimated (J) due to uncertainty at the low level. |
| J2 | - | Result is flagged as estimated (J) due to non-compliant serial dilution reproducibility. |
| J+1 | - | Positive result is flagged as estimated with the potential for high bias (J+) due to non-compliant MS/MSD recoveries. |
| U1 | - | Positive result is flagged as not-detected at the reported value (U) due to blank contamination. |

# TECHNICAL REVIEW REPORT

# SDG 10297680

# WET CHEMISTRIES

**TECHNICAL REVIEW REPORT**

**SDG 10297680**

**WET CHEMISTRIES**

The data evaluation was based on the procedures set forth in the Methods and included the following parameters:

* - holding times
* - calibration
- blanks
- matrix spike sample analysis
* - standard reference material analysis
- duplicate sample analysis
- detection limits
- overall assessment

* All criteria were met for this parameter.

Data validation, described in SW-846 and the Guidelines, which includes an evaluation of the usability of technically reviewed results with respect to project Data Quality Objectives and site chemistry knowledge, is included in the Data Validation/Usability Report.

A glossary of data qualifier definitions is presented in Appendix B.

BLANKS:

Blanks reported with positive values and their associated 5X action levels (AL) are tabulated below:

| BLANK ID. | PARAMETER | CONC. (mg/L) | AL (mg/L) |
|---|---|---|---|
| 502700 | fluoride (300.0) | 0.0070 | 0.035 |

| | | | |
|---|---|---|---|
| | nitrate-N | 0.050 | 0.25 |
| 502CDI | o-phosphate-P | 0.0074 | 0.037 |

Associated samples with values reported positive but below the action level:

| BLANK ID. | PARAMETER | ASSOCIATED SAMPLES | |
|---|---|---|---|
| 502CDI | o-phosphate-P | 502174 | 502177 |
| | | 502154 | 502178 |
| | | 502173 | 502600 |
| | | 502147 | |

Action:

- Associated positive sample results are flagged as not-detected at the reported value (U).

Comments:

The data user is cautioned that for the field blanks the actions may not apply directly to the indicated samples (e.g. the contamination is in the blank water per-se).

MATRIX SPIKE SAMPLE ANALYSIS:

Samples providing matrix spike (MS)/MS duplicate (MSD) recoveries or precision not within the laboratory default limits when the native level is reported at less than four times the spiking level are tabulated below:

| SAMPLE ID. | ANALYTE | MS/MSD RECOVERY (%) |
|---|---|---|
| 502128 | chloride | 137/81 |
| | sulfate | 118/ |
| 502131 | chloride | 116/ |
| | fluoride (300.0) | 0/0* |
| | sulfate | 116/ |

*Interference artefact.

Action:

- For MS and MSD recoveries above and below the limits sample results reported for the analyte are flagged as estimated (J).

Comments:

For recoveries above and below the limit mixed bias is indicated.

The above action is applied to samples 502174, 502177, 502154, 502178, 502173, 502600, and 502147 which are associated with the batch.

For sample 502178 the native level of nitrate-N is reported at >4 times the spiking level, therefore, this parameter could not be evaluated.

For nitrate-N and o-phosphate P the batch associated with samples 502127, 502124, 502126, 502149, 502148, 502147, 502180, 502172, and 502131 the laboratory included Batch QC matrix spike results. No action is taken since the Batch QC sample may not represent the matrix under study.

DUPLICATE SAMPLE ANALYSIS:

1. Sample 502131 was analyzed for fluoride by IC and ISE Methods and the result reported by the IC Method was substantially higher than the ISE Method. Only the result reported from the ISE Method should be used.

2. Field Duplicates.

Comments:

For this SDG sample 502600 is collocated with sample 502173. For this collocated sample pair all precision limits specified in the QAPP were met.

DETECTION LIMITS:

1. For this SDG, the laboratory was required to report results to their method detection limit (MDL). The MDL (described in 40CFR Part 136, Appendix B and incorporated by reference in SW-846), provides an error band, by definition, of ± 100 percent. The Estimated Quantitation Limit (EQL) is established at 5-10X the MDL in SW-846.

Action:

- Positive values reported between the MDL and PQL are flagged as estimated (J).

Comments:

Any values below the PQL contain inherently increasing error bands as the numbers become smaller. It is essential that the data user considers these statistical impacts on data quality at the low levels.

OVERALL ASSESSMENT:

The Culligan Deionized Water blank was reported with o-phosphate-P present at a concentration that generated an action level resulting in the flagging of the positive results reported for samples 502174, 502177, 502154, 502178, 502173, 502600, and 502147 as not-detected at the reported value (U).

The results reported for chloride in samples 502174, 502177, 502154, 502178,502173, 502600, and 502147 are flagged as estimated (J) due to non-compliant MS/MSD recoveries indicating mixed bias.

Any values reported positive between the MDL and PQL are flagged as estimated (J) due to uncertainty at the low levels.

Sample 502131 was analyzed for fluoride by IC and ISE Methods and the result reported by the IC Method was substantially higher than the ISE Method. Only the result reported from the ISE Method should be used.

All additional QC criteria evaluated were within specification and no further actions or flagging were required or deemed necessary.

# TECHNICAL REVIEW REPORT

# SDG 10298055

# WET CHEMISTRIES

**TECHNICAL REVIEW REPORT**

**SDG 10298055**

**WET CHEMISTRIES**

The data evaluation was based on the procedures set forth in the Methods and included the following parameters:

- holding times
* - calibration
- blanks
- matrix spike sample analysis
* - standard reference material analysis
- duplicate sample analysis
- detection limits
- overall assessment

* All criteria were met for this parameter.

Data validation, described in SW-846 and the Guidelines, which includes an evaluation of the usability of technically reviewed results with respect to project Data Quality Objectives and site chemistry knowledge, is included in the Data Validation/Usability Report.

A glossary of data qualifier definitions is presented in Appendix B.

HOLDING TIMES:

The following samples were analyzed outside the indicated method-specified holding time from sample collection to analysis:

| SAMPLE ID. | PARAMETER | HOLDING TIME (HOURS) |
|---|---|---|
| 502115 | nitrate-N | 51 |
| | o-phosphate-P | 51 |

| SAMPLE ID. | PARAMETER | HOLDING TIME (HOURS) |
|---|---|---|
| 502113 | nitrate-N | 52 |
| | o-phosphate-P | 52 |
| 502166 | nitrate-N | 52 |
| | o-phosphate-P | 52 |
| 502168 | nitrate-N | 53 |
| 502165 | nitrate-N | 49 |
| 502167 | nitrate-N | 48.5 |
| 502114 | nitrate-N | 50 |
| | o-phosphate-P | 51 |

Action:

- None, see comments.

Comments:

No action is taken since a FMC keeping quality study indicated that these parameters are stable beyond the above-indicated holding times.

BLANKS:

Blanks reported with positive values and their associated 5X action levels are tabulated below:

| BLANK ID. | PARAMETER | CONC. (mg/L) | ACTION LEVEL |
|---|---|---|---|
| 502701 | fluoride (IC) | 0.0090 | 0.045 |
| | o-phosphate-P | 0.0087 | 0.044 |

Associated samples with values reported positive but below the action level: NONE

MATRIX SPIKE SAMPLE ANALYSIS:

Samples providing matrix spike (MS)/MS duplicate (MSD) recoveries or precision not within the laboratory default limits when the native level is reported at less than four times the spiking level are tabulated below:

| SAMPLE ID. (BATCH) | ANALYTE | MS/MSD RECOVERY (%) |
|---|---|---|
| 502114 (22038) | fluoride (IC) | 119/113 |
| 502123 (22046) | fluoride (IC) | 78/86 |
| | nitrate-N | 79/68 |
| 502157 (22046) | chloride | 82/85 |
| | sulfate | 82/84 |

Action:

- For both MS and MSD recoveries below the lower limit sample results reported for the analyte are flagged as estimated with the potential for low bias (J-).
- For both MS and MSD recoveries above the upper limit positive sample results reported for the analyte are flagged as estimated with the potential for high bias (J+).

Comments:

The above actions are applied to all environmental samples in the associated batch associated with the SDG.

For sample 502123 the native levels of chloride and sulfate were reported at greater than four times the spiking level, therefore, this parameter could not be evaluated.

DUPLICATE SAMPLE ANALYSIS

Samples 502156 and 502157 were analyzed for fluoride by IC and ISE Methods with the following results not within the precision limits expected for laboratory replicates:

| SAMPLE ID. | IC (mg/L) | ISE (mg/L) |
|---|---|---|
| 502156 | 44.5 | ND (0.5) |
| 502157 | 27.7 | ND (0.5) |

For these samples only the results reported from the ISE Method should be used. Sample 502155 was also analyzed for fluoride by the IC and ISE Methods and the results agreed within the stated precision limits.

For this SDG sample 502601 is collocated with sample 502104. For this collocated sample pair all precision limits specified in the QAPP were met.

DETECTION LIMITS:

For this SDG the laboratory was required to report results to their method detection limit (MDL). The MDL (described in 40CFR Part 136, Appendix B and incorporated by reference in SW-846), provides an error band, by definition, of ± 100 percent. The Estimated Quantitation Limit (EQL) is established at 5-10X the MDL in SW-846.

Action:

- Positive values reported between the MDL and PQL are flagged as estimated (J).

Comments:

Any values below the PQL contain inherently increasing error bands as the numbers become smaller. It is essential that the data user considers these statistical impacts on data quality at the low levels.

OVERALL ASSESSMENT:

Sample 502114 provided MS/MSD recoveries of fluoride (IC) above the upper limit. Sample 502123 provided MS/MSD recoveries of fluoride (IC) and nitrate-N below the lower limit. Sample 502157 provided recoveries of chloride and sulfate below the lower limit. The results reported for these parameters in all environmental samples associated with the batch are flagged as estimated with the potential for high bias (J+) and estimated with the potential for low bias (J-), respectively.

For samples 502156 and 502157 only the results reported for fluoride from the ISE Method should be used due to indication of interference in the IC method.

Any values reported positive between the MDL and PQL are flagged as estimated (J) due to uncertainty at the low levels.

All additional QC criteria evaluated were within specification and no further actions or flagging were required or deemed necessary.

# APPENDIX B

# DEFINITION OF DATA QUALIFIERS

## GLOSSARY OF DATA QUALIFIERS

J - The associated value is an estimated quantity.

R - The data are unusable.

U - The parameter is not detected at the reported value.

B - The value is above the MDL or IDL but below the RL, or CRDL

# APPENDIX C

# GLOSSARY OF ACRONYMS

## GLOSSARY OF ACRONYMS

| | | |
|---|---|---|
| SDG | - | Sample Delivery Group |
| USEPA | - | Unites States Environmental Protection Agency |
| DQO | - | Data Quality Objectives |
| QAPjP | - | Quality Assurance Project Plan |
| RPD | - | Relative Percent Difference |
| CRDL | - | Contract Required Detection Limit |
| RL | - | Reporting Limit |
| IDL | - | Instrument Detection Limit |
| MDL | - | Method Detection Limit |
| CLP | - | Contract Laboratory Program |
| ICP | - | Ion Coupled Plasma |
| MS | - | Matrix Spike |
| MSD | - | Matrix Spike Duplicate |

**DATA PACKAGE REPORT**

**SAMPLE DELIVERY GROUP**

**RCRA SDG**

**10297680**

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502124** **Lab ID: 10297680012** Collected: 02/24/15 17:25 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:03 | 7440-43-9 | |
| Potassium | **12.2** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:03 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0092** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:06 | 7440-38-2 | |
| Selenium | **0.0035** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:06 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **197** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 17:23 | 16887-00-6 | |
| Fluoride | **0.74** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 13:45 | 16984-48-8 | |
| Nitrate as N | **3.0** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 13:45 | 14797-55-8 | |
| Sulfate | **90.7** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 13:45 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:47 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.086** | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:16 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502126** **Lab ID: 10297680013** Collected: 02/24/15 16:40 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:15 | 7440-43-9 | |
| Potassium | **9.6** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:15 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0079** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:10 | 7440-38-2 | |
| Selenium | **0.0024** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:10 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **94.9** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 14:00 | 16887-00-6 | |
| Fluoride | **0.87** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 14:00 | 16984-48-8 | |
| Nitrate as N | **2.2** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 14:00 | 14797-55-8 | |
| Sulfate | **86.4** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 14:00 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:49 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.063** | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:17 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502127** **Lab ID: 10297680010** Collected: 02/24/15 16:05 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:51 | 7440-43-9 | |
| Potassium | **14.0** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:51 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0072** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 11:57 | 7440-38-2 | |
| Selenium | **0.0065** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 11:57 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **324** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 17:06 | 16887-00-6 | |
| Fluoride | **0.53** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 13:14 | 16984-48-8 | |
| Nitrate as N | **5.5** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 13:14 | 14797-55-8 | |
| Sulfate | **210** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 17:06 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:45 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.078** | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:13 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502128** **Lab ID: 10297680009** Collected: 02/24/15 13:25 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:45 | 7440-43-9 | |
| Potassium | **18.1** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:45 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.014** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:52 | 7440-38-2 | |
| Selenium | **0.0046** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:52 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **395** | mg/L J | 12.0 | 6.0 | 10 | | 02/25/15 20:25 | 16887-00-6 | M6 |
| Fluoride | **0.39** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 15:13 | 16984-48-8 | |
| Nitrate as N | **7.3** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 15:13 | 14797-55-8 | M1 |
| Sulfate | **142** | mg/L | 12.0 | 6.0 | 10 | | 02/25/15 20:25 | 14808-79-8 | M6 |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:56 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.15** | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:48 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502131** **Lab ID: 10297680019** Collected: 02/25/15 11:15 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00031J** U | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:46 | 7440-43-9 | |
| Potassium | **13.5** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:46 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.052** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:38 | 7440-38-2 | |
| Selenium | **0.00078** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:38 | 7782-49-2 | |
| **SM4500F-C Fluoride** | Analytical Method: SM 4500F/C | | | | | | | | |
| Fluoride | ND | mg/L | 1.0 | 0.50 | 1 | | 03/07/15 12:32 | 16984-48-8 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **215** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 19:57 | 16887-00-6 | M6 |
| Fluoride | ~~80.1~~ U | mg/L | 5.0 | 0.60 | 100 | | 02/27/15 13:44 | 16984-48-8 | M6 |
| Nitrate as N | ND | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 16:01 | 14797-55-8 | |
| Sulfate | **173** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 19:57 | 14808-79-8 | M6 |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **0.034J** | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:57 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **8.0** | mg/L | 0.25 | 0.12 | 50 | | 02/26/15 13:27 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502147** **Lab ID: 10297680016** Collected: 02/25/15 08:15 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:29 | 7440-43-9 | |
| Potassium | **11.4** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:29 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0047** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:24 | 7440-38-2 | |
| Selenium | **0.0046** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:24 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **165** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 18:16 | 16887-00-6 | |
| Fluoride | **0.65** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 14:45 | 16984-48-8 | |
| Nitrate as N | **4.3** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 14:45 | 14797-55-8 | |
| Sulfate | **65.8** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 14:45 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:54 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.026** U | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:20 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502148** **Lab ID: 10297680015** Collected: 02/24/15 18:40 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:25 | 7440-43-9 | |
| Potassium | **13.0** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:25 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0064** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:19 | 7440-38-2 | |
| Selenium | **0.0056** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:19 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **198** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 17:59 | 16887-00-6 | |
| Fluoride | **0.70** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 14:30 | 16984-48-8 | |
| Nitrate as N | **3.9** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 14:30 | 14797-55-8 | |
| Sulfate | **107** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 17:59 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:53 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.060** | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:19 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502149** **Lab ID: 10297680014** Collected: 02/24/15 18:05 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:20 | 7440-43-9 | |
| Potassium | **11.4** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:20 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0076** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:15 | 7440-38-2 | |
| Selenium | **0.0026** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:15 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **141** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 17:41 | 16887-00-6 | |
| Fluoride | **0.95** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 14:15 | 16984-48-8 | |
| Nitrate as N | **2.1** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 14:15 | 14797-55-8 | |
| Sulfate | **60.0** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 14:15 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:51 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.062** | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:18 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502154** **Lab ID: 10297680003** Collected: 02/24/15 10:15 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:06 | 7440-43-9 | |
| Potassium | **13.2** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:06 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0046** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:20 | 7440-38-2 | |
| Selenium | **0.0032** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:20 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **208** J | mg/L | 6.0 | 3.0 | 5 | | 02/25/15 18:27 | 16887-00-6 | |
| Fluoride | **0.98** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 13:42 | 16984-48-8 | |
| Nitrate as N | **2.8** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 13:42 | 14797-55-8 | |
| Sulfate | **55.1** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 13:42 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:47 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.024** U | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:41 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502171** **Lab ID: 10297680008** Collected: 02/24/15 12:45 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:40 | 7440-43-9 | |
| Potassium | **20.7** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:40 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.018** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:49 | 7440-38-2 | |
| Selenium | **0.0029** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:49 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **220** | mg/L J | 6.0 | 3.0 | 5 | | 02/25/15 20:08 | 16887-00-6 | |
| Fluoride | **0.50** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 14:57 | 16984-48-8 | |
| Nitrate as N | **5.3** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 14:57 | 14797-55-8 | |
| Sulfate | **89.1** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 14:57 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:52 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.10** | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:47 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502172** **Lab ID: 10297680018** Collected: 02/25/15 10:10 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:41 | 7440-43-9 | |
| Potassium | **24.0** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:41 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.022** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:33 | 7440-38-2 | |
| Selenium | **0.0040** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:33 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **133** | mg/L | 6.0 | 3.0 | 5 | | 02/26/15 19:40 | 16887-00-6 | |
| Fluoride | **0.54** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 15:46 | 16984-48-8 | |
| Nitrate as N | **9.7** | mg/L | 0.50 | 0.25 | 5 | | 02/26/15 19:40 | 14797-55-8 | |
| Sulfate | **73.1** | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 15:46 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:56 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.34** | mg/L | 0.025 | 0.012 | 5 | | 02/26/15 13:26 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502173** **Lab ID: 10297680005** Collected: 02/24/15 11:55 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:26 | 7440-43-9 | |
| Potassium | **12.6** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:26 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0033** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:26 | 7440-38-2 | |
| Selenium | **0.0042** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:26 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **243** | mg/L J | 6.0 | 3.0 | 5 | | 02/25/15 19:02 | 16887-00-6 | |
| Fluoride | **0.81** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 14:12 | 16984-48-8 | |
| Nitrate as N | **3.3** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 14:12 | 14797-55-8 | |
| Sulfate | **67.8** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 14:12 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:49 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.018** U | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:42 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502174** **Lab ID: 10297680001** Collected: 02/24/15 08:30 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 10:38 | 7440-43-9 | |
| Potassium | **11.1** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 10:38 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0037** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:32 | 7440-38-2 | |
| Selenium | **0.0050** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:32 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **217** J | mg/L | 6.0 | 3.0 | 5 | | 02/25/15 17:51 | 16887-00-6 | |
| Fluoride | **0.68** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 13:11 | 16984-48-8 | |
| Nitrate as N | **4.6** J | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 13:11 | 14797-55-8 | |
| Sulfate | **93.8** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 13:11 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:45 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.024** J | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:39 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502177** **Lab ID: 10297680002** Collected: 02/24/15 09:35 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 10:43 | 7440-43-9 | |
| Potassium | **12.0** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 10:43 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0042** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:18 | 7440-38-2 | |
| Selenium | **0.0043** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:18 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **193** | mg/L | 6.0 | 3.0 | 5 | | 02/25/15 18:09 | 16887-00-6 | |
| Fluoride | **0.66** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 13:27 | 16984-48-8 | |
| Nitrate as N | **4.1** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 13:27 | 14797-55-8 | |
| Sulfate | **70.6** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 13:27 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:47 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.025** | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:40 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502178** **Lab ID: 10297680004** Collected: 02/24/15 10:55 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:19 | 7440-43-9 | |
| Potassium | **20.5** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:19 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0092** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:23 | 7440-38-2 | |
| Selenium | **0.0057** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:23 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **612** | mg/L J | 12.0 | 6.0 | 10 | | 02/25/15 18:44 | 16887-00-6 | |
| Fluoride | **0.29** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 13:57 | 16984-48-8 | |
| Nitrate as N | **5.8** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 13:57 | 14797-55-8 | |
| Sulfate | **394** | mg/L | 12.0 | 6.0 | 10 | | 02/25/15 18:44 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:48 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.035** U | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:41 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502180** **Lab ID: 10297680017** Collected: 02/25/15 09:05 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 12:34 | 7440-43-9 | |
| Potassium | **35.3** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 12:34 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.041** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:29 | 7440-38-2 | |
| Selenium | **0.0036** | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:29 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **128** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 18:34 | 16887-00-6 | |
| Fluoride | **0.59** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 15:00 | 16984-48-8 | |
| Nitrate as N | **37.7** | mg/L | 1.0 | 0.50 | 10 | | 02/26/15 18:34 | 14797-55-8 | |
| Sulfate | **108** | mg/L | 12.0 | 6.0 | 10 | | 02/26/15 18:34 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:55 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.45** | mg/L | 0.025 | 0.012 | 5 | | 02/26/15 13:25 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502600** **Lab ID: 10297680006** Collected: 02/24/15 12:30 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:30 | 7440-43-9 | |
| Potassium | **12.4** | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:30 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0033** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:29 | 7440-38-2 | |
| Selenium | **0.0043** | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:29 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **246** | mg/L | 6.0 | 3.0 | 5 | | 02/25/15 19:50 | 16887-00-6 | J |
| Fluoride | **0.80** | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 14:27 | 16984-48-8 | |
| Nitrate as N | **3.3** | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 14:27 | 14797-55-8 | |
| Sulfate | **67.8** | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 14:27 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:50 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.021** | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:43 | | U |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502700** **Lab ID: 10297680011** Collected: 02/24/15 17:05 Received: 02/26/15 11:45 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:58 | 7440-43-9 | |
| Potassium | ND | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:58 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | ND | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:01 | 7440-38-2 | |
| Selenium | ND | mg/L | 0.00050 | 0.00025 | 1 | 02/27/15 10:45 | 03/02/15 12:01 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | ND | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 13:29 | 16887-00-6 | |
| Fluoride | **0.0070J** | mg/L | 0.050 | 0.0060 | 1 | | 02/26/15 13:29 | 16984-48-8 | |
| Nitrate as N | **0.050J** | mg/L | 0.10 | 0.050 | 1 | | 02/26/15 13:29 | 14797-55-8 | |
| Sulfate | ND | mg/L | 1.2 | 0.60 | 1 | | 02/26/15 13:29 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 11:46 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | ND | mg/L | 0.0050 | 0.0025 | 1 | | 02/26/15 13:16 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10297680

**Sample: 502CDI** **Lab ID: 10297680007** Collected: 02/24/15 12:40 Received: 02/25/15 11:00 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 02/27/15 12:27 | 03/02/15 11:35 | 7440-43-9 | |
| Potassium | ND | mg/L | 2.5 | 1.2 | 1 | 02/27/15 12:27 | 03/02/15 11:35 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | ND | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:46 | 7440-38-2 | |
| Selenium | ND | mg/L | 0.00050 | 0.00025 | 1 | 02/26/15 10:41 | 02/27/15 12:46 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | ND | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 14:42 | 16887-00-6 | |
| Fluoride | ND | mg/L | 0.050 | 0.0060 | 1 | | 02/25/15 14:42 | 16984-48-8 | |
| Nitrate as N | ND | mg/L | 0.10 | 0.050 | 1 | | 02/25/15 14:42 | 14797-55-8 | |
| Sulfate | ND | mg/L | 1.2 | 0.60 | 1 | | 02/25/15 14:42 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 02/26/15 10:50 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.0074** | mg/L | 0.0050 | 0.0025 | 1 | | 02/25/15 13:44 | | |

# TECHNICAL REVIEW ACTION SUMMARY

TECHNICAL REVIEW ACTION SUMMARY
SDG 10297680

| | |
|---|---|
| Arsenic | |
| Cadmium | J1, U1 |
| Potassium | |
| Selenium | |

If the field is left blank no actions or qualifications were necessary.

J1 - Positive result is flagged as estimated (J) due to uncertainty at the low level.

U1 - Positive result is flagged as not-detected (U) due to blank contamination.

# SAMPLE ID CODES

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## SAMPLE SUMMARY

Project: FMC RCRA-REV
Pace Project No.: 10297680

| Lab ID | Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 10297680001 | 502174 | Water | 02/24/15 08:30 | 02/25/15 11:00 |
| 10297680002 | 502177 | Water | 02/24/15 09:35 | 02/25/15 11:00 |
| 10297680003 | 502154 | Water | 02/24/15 10:15 | 02/25/15 11:00 |
| 10297680004 | 502178 | Water | 02/24/15 10:55 | 02/25/15 11:00 |
| 10297680005 | 502173 | Water | 02/24/15 11:55 | 02/25/15 11:00 |
| 10297680006 | 502600 | Water | 02/24/15 12:30 | 02/25/15 11:00 |
| 10297680007 | 502CDI | Water | 02/24/15 12:40 | 02/25/15 11:00 |
| 10297680008 | 502171 | Water | 02/24/15 12:45 | 02/25/15 11:00 |
| 10297680009 | 502128 | Water | 02/24/15 13:25 | 02/25/15 11:00 |
| 10297680010 | 502127 | Water | 02/24/15 16:05 | 02/26/15 11:45 |
| 10297680011 | 502700 | Water | 02/24/15 17:05 | 02/26/15 11:45 |
| 10297680012 | 502124 | Water | 02/24/15 17:25 | 02/26/15 11:45 |
| 10297680013 | 502126 | Water | 02/24/15 16:40 | 02/26/15 11:45 |
| 10297680014 | 502149 | Water | 02/24/15 18:05 | 02/26/15 11:45 |
| 10297680015 | 502148 | Water | 02/24/15 18:40 | 02/26/15 11:45 |
| 10297680016 | 502147 | Water | 02/25/15 08:15 | 02/26/15 11:45 |
| 10297680017 | 502180 | Water | 02/25/15 09:05 | 02/26/15 11:45 |
| 10297680018 | 502172 | Water | 02/25/15 10:10 | 02/26/15 11:45 |
| 10297680019 | 502131 | Water | 02/25/15 11:15 | 02/26/15 11:45 |

# LABORATORY CASE NARRATIVE

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** EPA 6010
**Description:** 6010 MET ICP
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
19 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**
The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**
All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**
All criteria were within method requirements with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** EPA 6020
**Description:** 6020 MET ICPMS
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
19 samples were analyzed for EPA 6020. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**
The samples were prepared in accordance with EPA 3020 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**
All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**
All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**
All internal standards were within QC limits with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/52661

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10297679001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1908174)
  - Selenium
- MSD (Lab ID: 1908175)
  - Selenium

**Additional Comments:**

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** **SM 4500F/C**
**Description:** SM4500F-C Fluoride
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
1 sample was analyzed for SM 4500F/C. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** EPA 300.0
**Description:** 300.0 IC Anions
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
19 samples were analyzed for EPA 300.0. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**
All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**
All criteria were within method requirements with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: WETA/22013

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10297245003,10297680009

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 1905918)
  - Fluoride
  - Nitrate as N
- MS (Lab ID: 1906281)
  - Nitrate as N
- MSD (Lab ID: 1906282)
  - Nitrate as N

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 1906281)
  - Chloride
  - Sulfate
- MSD (Lab ID: 1906282)
  - Chloride

QC Batch: WETA/22035

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10297680019

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 1907401)
  - Chloride
  - Fluoride

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** EPA 300.0
**Description:** 300.0 IC Anions
**Client:** FMC
**Date:** March 12, 2015

QC Batch: WETA/22035

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10297680019

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- Sulfate
- MSD (Lab ID: 1907402)
  - Fluoride

**Additional Comments:**

Analyte Comments:

QC Batch: WETA/22035

1M: Fluoride spike did not recover due to peak not eluting correctly.

- MS (Lab ID: 1907401)
  - Fluoride
- MSD (Lab ID: 1907402)
  - Fluoride

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** **EPA 350.1**
**Description:** 350.1 Ammonia
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
19 samples were analyzed for EPA 350.1. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**
All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**
All criteria were within method requirements with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: FMC RCRA-REV
Pace Project No.: 10297680

**Method:** SM 4500-P E
**Description:** Phosphate, Ortho Low Level
**Client:** FMC
**Date:** March 12, 2015

**General Information:**
19 samples were analyzed for SM 4500-P E. All samples were received in acceptable condition with any exceptions noted below.

**Hold Time:**
The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**
All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**
All criteria were within method requirements with any exceptions noted below.

**Method Blank:**
All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**
All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

**CHAIN-OF-CUSTODY**

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

SHORT HOLD 2/25/15 mm

10497680

Page: 1 of 1

**Section A** Required Client Information:

| | |
|---|---|
| Company: | FMC |
| Address: | PO BOX 4111 |
| | POCATELLO, ID 83202 |
| Email To: | brian.mcginnis@fmc.com |
| Phone: | Fax: |
| Requested Due Date/TAT: | |

**Section B** Required Project Information:

| | |
|---|---|
| Report To: | Ericka Vallance, Hydrometrics |
| Copy To: | Rob Hartman, MWH |
| | Bruce Wallin, ECCI |
| Purchase Order No.: | |
| Project Name: | FMC |
| Project Number: | RCRA |

**Section C** Invoice Information:

| | |
|---|---|
| Attention: | Brian McGinnis |
| Company Name: | FMC |
| Address: | PO BOX 4111 POCATELLO ID 83202 |
| Pace Quote Reference: | |
| Pace Project Manager: | Kabor Xiong |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER

Site Location STATE: ID

**Section D** Required Client Information

**SAMPLE ID** (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

| MATRIX | CODE |
|---|---|
| DRINKING WATER | DW |
| WATER | WT |
| WASTE WATER | WW |
| PRODUCT | P |
| SOIL/SOLID | SL |
| OIL | OL |
| WIPE | WP |
| AIR | AR |
| OTHER | OT |
| TISSUE | TS |

| ITEM # | SAMPLE ID | MATRIX CODE (see valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED COMPOSITE START DATE | COLLECTED COMPOSITE START TIME | COLLECTED COMPOSITE END/GRAB DATE | COLLECTED COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test Y/N | **WQP | TOTAL METALS 6020 | TOTAL METALS 6010 | FLUORIDE (ISE) | TOTAL PHOS by ICP | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5402174 | WT | G | – | – | 2/24/15 | 0830 | | 3 | X | X | X | | | | | | X | X | X | | | | | 001 |
| 2 | 5402177 | WT | G | – | – | | 0935 | | | | | | | | | | | | | | | | | | 002 |
| 3 | 5402154 | WT | G | – | – | | 1015 | | | | | | | | | | | | | | | | | | 003 |
| 4 | 5402178 | WT | G | – | – | | 1055 | | | | | | | | | | | | | | | | | | 004 |
| 5 | 5402173 | WT | G | – | – | | 1155 | | | | | | | | | | | | | | | | | | 005 |
| 6 | 5402600 | WT | G | – | – | | 1230 | | | | | | | | | | | | | | | | | | 006 |
| 7 | 5402CDI | WT | G | – | – | | 1240 | | | | | | | | | | | | | | | | | | 007 |
| 8 | 5402171 | WT | G | – | – | | 1245 | | | | | | | | | | | | | | | | | | 008 |
| 9 | 5402128 | WT | G | – | – | ☆ | 1325 | | ☆ | ☆ | ☆ | ☆ | | | | | | ☆ | ☆ | ☆ | | | | | 009 |
| 10 | ~~5402127~~ ine | WT | G | – | – | | | | | | | | | | | | | | | | | | | | |
| 11 | 5402 | WT | G | – | – | | | | | | | | | | | | | | | | | | | | |
| 12 | 5402 | WT | G | – | – | | | | | | | | | | | | | | | | | | | | |

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Fed Ex Air Bill # 805397293074 | Walter Crane / Hydrometrics | 2/24/15 | 14:15 | mm / PACE | 2/25/15 | 11:00 | 2.7 | Y | Y | Y |
| **WQP: 300.0- Cl, SO4, Nitrate, F; Ortho Phos, Ammonia | | | | | | | | | | |
| 6010: Cadmium, Potassium; 6020: Arsenic, Selenium | | | | | | | | | | |
| Total Phos by ICP only on wells 108, 121, 122 & 123 | | | | | | | | | | |

| SAMPLER NAME AND SIGNATURE | | | Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |
|---|---|---|---|---|---|---|
| PRINT Name of SAMPLER: | Walter Crane | | | | | |
| SIGNATURE of SAMPLER: | Walter Crane | DATE Signed (MM/DD/YY): 02/24/15 | | | | |



*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges at 1.5% per month for any invoices not paid within 30 days.

| Pace Analytical® | Document Name: Sample Condition Upon Receipt Form | Document Revised: 28Feb2014 Page 1 of 1 |
|---|---|---|
| | Document No.: F-MN-L-213-rev.09 | Issuing Authority: Pace Minnesota Quality Office |

**Sample Condition Upon Receipt**

**Client Name:** FMC

**Project #:** WO#: 10297680

10297680

**Courier:** ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:

**Tracking Number:** 8053 9729 3074

**Custody Seal on Cooler/Box Present?** ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No

**Optional:** Proj. Due Date: Proj. Name:

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other:

**Temp Blank?** ☐ Yes ☒ No

**Thermom. Used:** ☒ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491

**Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Samples on ice, cooling process has begun

**Cooler Temp Read (°C):** 1.7 **Cooler Temp Corrected (°C):** 1.7

Temp should be above freezing to 6°C **Correction Factor:**

**Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

**Date and Initials of Person Examining Contents:** 2/25/15 mm

| | | | | Comments: |
|---|---|---|---|---|
| Chain of Custody Present? | ☒ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☒ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☒ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☒ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☒ Yes | ☐ No | ☐ N/A | 5. |
| Short Hold Time Analysis (<72 hr)? | ☒ Yes | ☐ No | ☐ N/A | 6. |
| Rush Turn Around Time Requested? | ☐ Yes | ☒ No | ☐ N/A | 7. |
| Sufficient Volume? | ☒ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☒ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☒ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☒ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☒ N/A | 11. |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT | ☒ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☒ Yes | ☐ No | ☐ N/A | 13. ☒ $HNO_3$ ☒ $H_2SO_4$ ☐ NaOH ☐ HCl |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☒ Yes | ☐ No | ☐ N/A | Sample # 1-7 1/1 1/1 |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC | ☐ Yes | ☒ No | | Initial when completed: Lot # of added preservative: |
| Headspace in VOA Vials ( >6mm)? | ☐ Yes | ☐ No | ☒ N/A | 14. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☒ N/A | 15. |
| Trip Blank Custody Seals Present? | ☐ Yes | ☐ No | ☒ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION**

**Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager Review:** Kala Young **Date:** 2/25/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office ( i.e out of hold, incorrect preservative, out of temp, incorrect containers)

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# CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

10297680

Page: 1 of 1

**Section A** — Required Client Information:

| | |
|---|---|
| Company: | FMC |
| Address: | PO BOX 4111 |
| | POCATELLO, ID 83202 |
| Email To: | brian.mcginnis@fmc.com |
| Phone: | Fax: |
| Requested Due Date/TAT: | |

**Section B** — Required Project Information:

| | |
|---|---|
| Report To: | Ericka Vallance, Hydrometrics |
| Copy To: | Rob Hartman, MWH |
| | Bruce Wallin, ECCI |
| Purchase Order No.: | |
| Project Name: | FMC |
| Project Number: | RCRA |

**Section C** — Invoice Information:

| | |
|---|---|
| Attention: | Brian McGinnis |
| Company Name: | FMC |
| Address: | PO BOX 4111 POCATELLO ID 83202 |
| Pace Quote Reference: | |
| Pace Project Manager: | Kabor Xiong |
| Pace Profile #: | |

**REGULATORY AGENCY**

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☑ RCRA ☐ OTHER

Site Location STATE: ID

**Section D** — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

| MATRIX | CODE |
|---|---|
| DRINKING WATER | DW |
| WATER | WT |
| WASTE WATER | WW |
| PRODUCT | P |
| SOIL/SOLID | SL |
| OIL | OL |
| WIPE | WP |
| AIR | AR |
| OTHER | OT |
| TISSUE | TS |

| ITEM # | SAMPLE ID | MATRIX CODE (use valid codes to left) | SAMPLE TYPE (G=GRAB C=COMP) | COLLECTED: COMPOSITE START DATE | COMPOSITE START TIME | COMPOSITE END/GRAB DATE | COMPOSITE END/GRAB TIME | SAMPLE TEMP AT COLLECTION | # OF CONTAINERS | Preservatives: Unpreserved | $H_2SO_4$ | $HNO_3$ | HCl | NaOH | $Na_2S_2O_3$ | Methanol | Other | Analysis Test Y/N | **WQP | TOTAL METALS 6020 | TOTAL METALS 6010 | FLUORIDE (ISE) | **TOTAL PHOS by ICP | Residual Chlorine (Y/N) | Pace Project No./ Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 5402127 | WT | G | -- | -- | 2/24/15 | 1605 | | 3 | X | X | X | | | | | | | X | X | X | | | | | 010 |
| 2 | ~~5402126~~ 502780 | WT | G | -- | -- | | 1705 | | | | | | | | | | | | | | | | | | | 011 |
| 3 | 5402124 | WT | G | -- | -- | | 1725 | | | | | | | | | | | | | | | | | | | 012 |
| 4 | 5402126 | WT | G | -- | -- | | 1640 | | | | | | | | | | | | | | | | | | | 013 |
| 5 | 5402149 | WT | G | -- | -- | | 1805 | | | | | | | | | | | | | | | | | | | 014 |
| 6 | 5402148 | WT | G | -- | -- | | 1840 | | | | | | | | | | | | | | | | | | | 015 |
| 7 | 5402147 | WT | G | -- | -- | 2/25/15 | 0815 | | | | | | | | | | | | | | | | | | | 016 |
| 8 | 5402180 | WT | G | -- | -- | | 0905 | | | | | | | | | | | | | | | | | | | 017 |
| 9 | 5402172 | WT | G | -- | -- | | 1010 | | | | | | | | | | | | | | | | | | | 018 |
| 10 | 5402131 | WT | G | -- | -- | | 1115 | | 4 | | | | | | | | | | | | | | | X | | 019 |
| 11 | 5402 | WT | G | -- | -- | | | | | | | | | | | | | | | | | | | | | |
| 12 | 5402 | WT | G | -- | -- | | | | | | | | | | | | | | | | | | | | | |

Requested Analysis Filtered (Y/N)

| ADDITIONAL COMMENTS | RELINQUISHED BY / AFFILIATION | DATE | TIME | ACCEPTED BY / AFFILIATION | DATE | TIME | SAMPLE CONDITIONS: Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N) |
|---|---|---|---|---|---|---|---|---|---|---|
| Fed Ex Air Bill # 805397293085 | Walter Crave / Hydrometrics | 2/25/15 | 16:30 | WM FedEx | 2/26/15 | 11:45 | 0.7 | Y | Y | Y |
| **WQP: 300.0- Cl, SO4, Nitrate, F; Ortho Phos, Ammonia | | | | | | | | | | |
| 6010: Cadmium, Potassium; 6020: Arsenic, Selenium | | | | | | | | | | |
| Total Phos by ICP only on wells 108, 121, 122 & 123 | | | | | | | | | | |

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Walter Crave

SIGNATURE of SAMPLER: Walter Crave — DATE Signed (MM/DD/YY): 02/25/15

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

| Pace Analytical® | Document Name: Sample Condition Upon Receipt Form | Document Revised: 28Feb2014 Page 1 of 1 |
|---|---|---|
| | Document No.: F-MN-L-213-rev.09 | Issuing Authority: Pace Minnesota Quality Office |

**Sample Condition Upon Receipt** **Client Name:** FMC **Project #:** WO#: 10297680

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client
☐ Commercial ☐ Pace ☐ SpeeDee ☐ Other:
Tracking Number: 8059 9724 3685

**Custody Seal on Cooler/Box Present?** ☐ Yes ☐ No **Seals Intact?** ☐ Yes ☐ No **Optional:** Proj. Due Date: Proj. Name:

**Packing Material:** ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other: **Temp Blank?** ☐ Yes ☑ No

**Thermom. Used:** ☑ B88A9130516413 ☐ B88A912167504 ☐ B88A9132521491 **Type of Ice:** ☑ Wet ☐ Blue ☐ None ☐ Samples on Ice, cooling process has begun

**Cooler Temp Read (°C):** 0.9 **Cooler Temp Corrected (°C):** 0.9 **Biological Tissue Frozen?** ☐ Yes ☐ No ☑ N/A
Temp should be above freezing to 6°C **Correction Factor:** — **Date and Initials of Person Examining Contents:** 2/26/15 km

| | | | | Comments: |
|---|---|---|---|---|
| Chain of Custody Present? | ☑ Yes | ☐ No | ☐ N/A | 1. |
| Chain of Custody Filled Out? | ☑ Yes | ☐ No | ☐ N/A | 2. |
| Chain of Custody Relinquished? | ☑ Yes | ☐ No | ☐ N/A | 3. |
| Sampler Name and/or Signature on COC? | ☑ Yes | ☐ No | ☐ N/A | 4. |
| Samples Arrived within Hold Time? | ☑ Yes | ☐ No | ☐ N/A | 5. |
| Short Hold Time Analysis (<72 hr)? | ☑ Yes | ☐ No | ☐ N/A | 6. |
| Rush Turn Around Time Requested? | ☐ Yes | ☑ No | ☐ N/A | 7. |
| Sufficient Volume? | ☑ Yes | ☐ No | ☐ N/A | 8. |
| Correct Containers Used? | ☑ Yes | ☐ No | ☐ N/A | 9. |
| -Pace Containers Used? | ☑ Yes | ☐ No | ☐ N/A | |
| Containers Intact? | ☑ Yes | ☐ No | ☐ N/A | 10. |
| Filtered Volume Received for Dissolved Tests? | ☐ Yes | ☐ No | ☑ N/A | 11. |
| Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WW | ☑ Yes | ☐ No | ☐ N/A | 12. |
| All containers needing acid/base preservation have been checked? | ☑ Yes | ☐ No | ☐ N/A | 13. ☑ $HNO_3$ ☑ $H_2SO_4$ ☐ NaOH ☐ HCl |
| All containers needing preservation are found to be in compliance with EPA recommendation? ($HNO_3$, $H_2SO_4$, HCl<2; NaOH >9 Sulfide, NaOH>12 Cyanide) | ☑ Yes | ☐ No | ☐ N/A | Sample # 1-10 1/1 1/1 |
| Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC | ☐ Yes | ☑ No | | Initial when completed: Lot # of added preservative: |
| Headspace in VOA Vials ( >6mm)? | ☐ Yes | ☐ No | ☑ N/A | 14. |
| Trip Blank Present? | ☐ Yes | ☐ No | ☑ N/A | 15. |
| Trip Blank Custody Seals Present? | ☐ Yes | ☐ No | ☑ N/A | |
| Pace Trip Blank Lot # (if purchased): | | | | |

**CLIENT NOTIFICATION/RESOLUTION** **Field Data Required?** ☐ Yes ☐ No

Person Contacted: Date/Time:

Comments/Resolution:

**Project Manager Review:** Kala Young **Date:** 2/26/15

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DENR Certification Office ( i.e out of hold, incorrect preservative, out of temp, incorrect containers)

**DATA PACKAGE REPORT**

**SAMPLE DELIVERY GROUP**

**RCRA SDG**

**10298055**

Pace Analytical Services, Inc.
150 N Ninth Street
Billings, MT 59101
(406)254-7226

## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502104** **Lab ID: 10298055015** Collected: 02/26/15 12:25 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00036J** U | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 11:47 | 7440-43-9 | |
| Potassium | **244** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 11:47 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.040** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:31 | 7440-38-2 | |
| Selenium | **0.0035J** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:31 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **121** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:12 | 16887-00-6 | |
| Fluoride | **3.1** J+ | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 20:31 | 16984-48-8 | |
| Nitrate as N | **20.1** | mg/L | 1.0 | 0.50 | 10 | | 02/28/15 07:12 | 14797-55-8 | |
| Sulfate | **136** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:12 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **3.2** | mg/L | 0.080 | 0.040 | 2 | | 03/05/15 13:04 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **1.1** | mg/L | 0.12 | 0.062 | 25 | | 02/27/15 15:57 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502108** **Lab ID: 10298055011** Collected: 02/26/15 10:15 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Phosphorus | **1610** | ug/L | 100 | 37.1 | 1 | 03/05/15 14:31 | 03/06/15 09:05 | 7723-14-0 | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 11:07 | 7440-43-9 | |
| Potassium | **118** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 11:07 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.022** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:28 | 7440-38-2 | |
| Selenium | **0.012** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:28 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **411** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:41 | 16887-00-6 | |
| Fluoride | **0.35** | mg/L JH | 0.050 | 0.0060 | 1 | | 02/27/15 19:45 | 16984-48-8 | |
| Nitrate as N | **15.1** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 21:41 | 14797-55-8 | |
| Sulfate | **331** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:41 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:23 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **1.5** | mg/L | 0.25 | 0.12 | 50 | | 02/27/15 16:15 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502113** **Lab ID: 10298055002** Collected: 02/25/15 13:45 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:01 | 7440-43-9 | |
| Potassium | **17.4** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:01 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.028** | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:54 | 7440-38-2 | |
| Selenium | **0.0035** J | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:54 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **128** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 17:27 | 16887-00-6 | |
| Fluoride | **0.43** J+ | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 16:06 | 16984-48-8 | |
| Nitrate as N | **8.4** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 17:27 | 14797-55-8 | H1 |
| Sulfate | **87.7** | mg/L | 1.2 | 0.60 | 1 | | 02/27/15 16:06 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:15 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.20** | mg/L | 0.010 | 0.0050 | 2 | | 02/27/15 16:08 | | H1 |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502114ABC** **Lab ID: 10298055024** Collected: 02/25/15 12:10 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00028J** U | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 12:14 | 7440-43-9 | |
| Potassium | **31.3** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 12:14 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.13** J+ | mg/L | 0.00050 | 0.00025 | 1 | 03/02/15 12:19 | 03/03/15 09:58 | 7440-38-2 | M1 |
| Selenium | **0.0024** J | mg/L | 0.00050 | 0.00025 | 1 | 03/02/15 12:19 | 03/03/15 09:58 | 7782-49-2 | |
| **SM4500F-C Fluoride** | Analytical Method: SM 4500F/C | | | | | | | | |
| Fluoride | **0.89J** | mg/L | 1.0 | 0.50 | 1 | | 03/08/15 14:53 | 16984-48-8 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **140** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 04:30 | 16887-00-6 | |
| Fluoride | **1.2** J+ | mg/L | 0.50 | 0.060 | 10 | | 02/28/15 04:30 | 16984-48-8 | M6 |
| Nitrate as N | **0.050J** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 14:48 | 14797-55-8 | H1 |
| Sulfate | **102** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 04:30 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **2.0** | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:05 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **1.6** | mg/L | 0.25 | 0.12 | 50 | | 02/27/15 15:01 | | H1 |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502115** **Lab ID: 10298055001** Collected: 02/25/15 13:05 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00035J** | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 09:54 | 7440-43-9 | |
| Potassium | **14.1** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 09:54 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.25** | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:51 | 7440-38-2 | |
| Selenium | **0.0038** J | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:51 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **149** J+ | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 16:24 | 16887-00-6 | |
| Fluoride | **0.75** J+ | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 15:51 | 16984-48-8 | |
| Nitrate as N | **65.6** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 16:24 | 14797-55-8 | H1 |
| Sulfate | **341** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 16:24 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:12 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **2.7** | mg/L | 0.25 | 0.12 | 50 | | 02/27/15 16:07 | | H1 |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502121** **Lab ID: 10298055009** Collected: 02/26/15 08:50 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Phosphorus | **679** | ug/L | 100 | 37.1 | 1 | 03/05/15 14:31 | 03/06/15 08:55 | 7723-14-0 | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:53 | 7440-43-9 | |
| Potassium | **54.2** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:53 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.0097** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:23 | 7440-38-2 | |
| Selenium | **0.015** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:23 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **499** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:06 | 16887-00-6 | |
| Fluoride | **0.16** | mg/L J+ | 0.050 | 0.0060 | 1 | | 02/27/15 19:15 | 16984-48-8 | |
| Nitrate as N | **16.8** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 21:06 | 14797-55-8 | |
| Sulfate | **389** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:06 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:21 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.62** | mg/L | 0.050 | 0.025 | 10 | | 02/27/15 16:11 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502122** **Lab ID: 10298055010** Collected: 02/26/15 09:35 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Phosphorus | **9870** | ug/L | 100 | 37.1 | 1 | 03/05/15 14:31 | 03/06/15 09:00 | 7723-14-0 | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 11:00 | 7440-43-9 | |
| Potassium | **134** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 11:00 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.056** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:25 | 7440-38-2 | |
| Selenium | **0.0095** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:25 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **340** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:23 | 16887-00-6 | |
| Fluoride | **0.063** | mg/L J+ | 0.050 | 0.0060 | 1 | | 02/27/15 19:30 | 16984-48-8 | |
| Nitrate as N | **19.8** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 21:23 | 14797-55-8 | |
| Sulfate | **370** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 21:23 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:22 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **9.4** | mg/L | 0.25 | 0.12 | 50 | | 02/27/15 16:12 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502123 ABC** **Lab ID: 10298055012** Collected: 02/26/15 10:55 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Phosphorus | **542** | ug/L | 100 | 37.1 | 1 | 03/05/15 14:31 | 03/06/15 09:10 | 7723-14-0 | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 11:13 | 7440-43-9 | |
| Potassium | **28.0** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 11:13 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.19** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:37 | 7440-38-2 | |
| Selenium | **0.15** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:37 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **90.2** J | mg/L | 1.2 | 0.60 | 1 | | 02/27/15 22:56 | 16887-00-6 | M1 |
| Fluoride | **0.94** J | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 22:56 | 16984-48-8 | M1 |
| Nitrate as N | **2.4** J | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 22:56 | 14797-55-8 | M1 |
| Sulfate | **518** J | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 08:39 | 14808-79-8 | M6 |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **3.5** | mg/L | 0.080 | 0.040 | 2 | | 03/05/15 12:59 | 7664-41-7 | M1 |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.52** | mg/L | 0.025 | 0.012 | 5 | | 02/27/15 15:55 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502155** **Lab ID: 10298055017** Collected: 02/26/15 13:05 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 12:00 | 7440-43-9 | |
| Potassium | **477** | mg/L | 12.5 | 6.2 | 5 | 03/03/15 11:09 | 03/04/15 12:48 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.11** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:02 | 7440-38-2 | |
| Selenium | **0.0072** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:02 | 7782-49-2 | |
| **SM4500F-C Fluoride** | Analytical Method: SM 4500F/C | | | | | | | | |
| Fluoride | ND | mg/L | 1.0 | 0.50 | 1 | | 03/08/15 14:46 | 16984-48-8 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **183** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:47 | 16887-00-6 | |
| Fluoride | **0.077** J+ | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 22:11 | 16984-48-8 | |
| Nitrate as N | **7.5** | mg/L | 1.0 | 0.50 | 10 | | 02/28/15 07:47 | 14797-55-8 | |
| Sulfate | **258** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:47 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **0.50** | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:30 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **16.9** | mg/L | 0.50 | 0.25 | 100 | | 02/27/15 15:59 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502156** **Lab ID: 10298055018** Collected: 02/26/15 13:50 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 12:07 | 7440-43-9 | |
| Potassium | **1280** | mg/L | 12.5 | 6.2 | 5 | 03/03/15 11:09 | 03/04/15 12:53 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.15** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:05 | 7440-38-2 | |
| Selenium | ND J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:05 | 7782-49-2 | D3 |
| **SM4500F-C Fluoride** | Analytical Method: SM 4500F/C | | | | | | | | |
| Fluoride | ND | mg/L | 1.0 | 0.50 | 1 | | 03/08/15 14:50 | 16984-48-8 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **363** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 08:04 | 16887-00-6 | |
| Fluoride | **44.5** J+ | mg/L | 5.0 | 0.60 | 100 | | 03/02/15 13:18 | 16984-48-8 | |
| Nitrate as N | **1.8** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 22:26 | 14797-55-8 | |
| Sulfate | **254** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 08:04 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **11.8** | mg/L | 0.28 | 0.14 | 7 | | 03/05/15 14:26 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **170** | mg/L | 12.5 | 6.2 | 2500 | | 02/27/15 16:15 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502157ABC** **Lab ID: 10298055019** Collected: 02/26/15 14:35 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/02/15 10:08 | 03/02/15 16:39 | 7440-43-9 | |
| Potassium | **255** | mg/L | 2.5 | 1.2 | 1 | 03/02/15 10:08 | 03/02/15 16:39 | 7440-09-7 | M1 |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.096** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:08 | 7440-38-2 | |
| Selenium | ND | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 13:08 | 7782-49-2 | |
| **SM4500F-C Fluoride** | Analytical Method: SM 4500F/C | | | | | | | | |
| Fluoride | ND | mg/L | 1.0 | 0.50 | 1 | | 03/07/15 12:42 | 16984-48-8 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **243** | mg/L | 12.0 | 6.0 | 10 | | 03/02/15 10:58 | 16887-00-6 | M6 |
| Fluoride | **27.7** | mg/L | 2.5 | 0.30 | 50 | | 03/02/15 11:59 | 16984-48-8 | |
| Nitrate as N | **0.054** J | mg/L | 0.10 | 0.050 | 1 | | 02/28/15 00:29 | 14797-55-8 | |
| Sulfate | **284** | mg/L | 12.0 | 6.0 | 10 | | 03/02/15 10:58 | 14808-79-8 | M6 |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **2.2** | mg/L | 0.080 | 0.040 | 2 | | 03/05/15 13:38 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **44.4** | mg/L | 2.5 | 1.2 | 500 | | 02/27/15 16:01 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502158** **Lab ID: 10298055008** Collected: 02/26/15 08:05 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:46 | 7440-43-9 | |
| Potassium | **20.7** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:46 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.013** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:14 | 7440-38-2 | |
| Selenium | **0.0052** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:14 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **109** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 06:54 | 16887-00-6 | |
| Fluoride | **0.16** | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 19:00 | 16984-48-8 | |
| Nitrate as N | **2.8** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 19:00 | 14797-55-8 | |
| Sulfate | **578** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 06:54 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **0.030** J | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:20 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.070** | mg/L | 0.0050 | 0.0025 | 1 | | 02/27/15 15:54 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502165** **Lab ID: 10298055005** Collected: 02/25/15 17:25 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:19 | 7440-43-9 | |
| Potassium | **12.1** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:19 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.026** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:05 | 7440-38-2 | |
| Selenium | **0.0053** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:05 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **247** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 05:32 | 16887-00-6 | |
| Fluoride | **0.18** | mg/L J+ | 0.050 | 0.0060 | 1 | | 02/27/15 18:14 | 16984-48-8 | |
| Nitrate as N | **4.0** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 18:14 | 14797-55-8 | H1 |
| Sulfate | **152** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 05:32 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:18 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.26** | mg/L | 0.010 | 0.0050 | 2 | | 02/27/15 16:09 | | |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502166** **Lab ID: 10298055003** Collected: 02/25/15 14:45 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:05 | 7440-43-9 | |
| Potassium | **30.7** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:05 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.019** | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:57 | 7440-38-2 | |
| Selenium | **0.0058** J | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 11:57 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **229** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 17:44 | 16887-00-6 | |
| Fluoride | **0.68** | mg/L J+ | 0.050 | 0.0060 | 1 | | 02/27/15 16:39 | 16984-48-8 | |
| Nitrate as N | **38.9** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 17:44 | 14797-55-8 | H1 |
| Sulfate | **191** | mg/L | 12.0 | 6.0 | 10 | | 02/27/15 17:44 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:16 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.26** | mg/L | 0.010 | 0.0050 | 2 | | 02/27/15 16:08 | | H1 |

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502167** **Lab ID: 10298055006** Collected: 02/25/15 18:05 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00065J** | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:26 | 7440-43-9 | |
| Potassium | **13.3** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:26 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.051** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:08 | 7440-38-2 | |
| Selenium | **0.0024J** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:08 | 7782-49-2 | D3 |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **151** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 05:49 | 16887-00-6 | |
| Fluoride | **1.5** | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 18:30 | 16984-48-8 | |
| Nitrate as N | **0.066J** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 18:30 | 14797-55-8 | H1 |
| Sulfate | **155** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 05:49 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:18 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **5.0** | mg/L | 0.25 | 0.12 | 50 | | 02/27/15 16:10 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502168** **Lab ID: 10298055004** Collected: 02/25/15 15:45 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:12 | 7440-43-9 | |
| Potassium | **18.1** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:12 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.024** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:02 | 7440-38-2 | |
| Selenium | **0.073** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:02 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **57.9** | mg/L | 1.2 | 0.60 | 1 | | 02/27/15 17:59 | 16887-00-6 | |
| Fluoride | **3.8** J+ | mg/L | 0.50 | 0.060 | 10 | | 02/27/15 20:48 | 16984-48-8 | |
| Nitrate as N | **24.9** | mg/L | 1.0 | 0.50 | 10 | | 02/27/15 20:48 | 14797-55-8 | H1 |
| Sulfate | **1450** | mg/L | 60.0 | 30.0 | 50 | | 03/02/15 13:01 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **0.14** | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:16 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.093** | mg/L | 0.0050 | 0.0025 | 1 | | 02/27/15 15:10 | | |

## REPORT OF LABORATORY ANALYSIS

Pace Analytical®
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Pace Analytical Services, Inc.
150 N Ninth Street
Billings, MT 59101
(406)254-7226

## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502183** **Lab ID: 10298055007** Collected: 02/25/15 19:15 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 10:32 | 7440-43-9 | |
| Potassium | **12.9** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 10:32 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.017** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:11 | 7440-38-2 | |
| Selenium | **0.0050** J | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:11 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **104** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 06:06 | 16887-00-6 | |
| Fluoride | **0.32** | mg/L J+ | 0.050 | 0.0060 | 1 | | 02/27/15 18:45 | 16984-48-8 | |
| Nitrate as N | **1.8** | mg/L | 0.10 | 0.050 | 1 | | 02/27/15 18:45 | 14797-55-8 | |
| Sulfate | **231** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 06:06 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:20 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.057** | mg/L | 0.0050 | 0.0025 | 1 | | 02/27/15 15:13 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502601** **Lab ID: 10298055016** Collected: 02/26/15 12:50 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | **0.00036J** | mg/L | 0.0030 | 0.00025 | 1 | 03/03/15 11:09 | 03/04/15 11:54 | 7440-43-9 | U |
| Potassium | **233** | mg/L | 2.5 | 1.2 | 1 | 03/03/15 11:09 | 03/04/15 11:54 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.039** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:34 | 7440-38-2 | |
| Selenium | **0.0035** | mg/L | 0.0025 | 0.0012 | 5 | 03/03/15 11:24 | 03/03/15 12:34 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | **123** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:29 | 16887-00-6 | |
| Fluoride | **3.1** | mg/L | 0.050 | 0.0060 | 1 | | 02/27/15 21:56 | 16984-48-8 | |
| Nitrate as N | **20.6** | mg/L | 1.0 | 0.50 | 10 | | 02/28/15 07:29 | 14797-55-8 | |
| Sulfate | **138** | mg/L | 12.0 | 6.0 | 10 | | 02/28/15 07:29 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | **3.2** | mg/L | 0.080 | 0.040 | 2 | | 03/05/15 13:06 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **1.1** | mg/L | 0.12 | 0.062 | 25 | | 02/27/15 15:58 | | |

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FMC RCRA
Pace Project No.: 10298055

**Sample: 502701** **Lab ID: 10298055023** Collected: 02/26/15 17:10 Received: 02/27/15 09:55 Matrix: Water

| Parameters | Results | Units | PQL | MDL | DF | Prepared | Analyzed | CAS No. | Qual |
|---|---|---|---|---|---|---|---|---|---|
| **6010 MET ICP** | Analytical Method: EPA 6010 Preparation Method: EPA 3010 | | | | | | | | |
| Cadmium | ND | mg/L | 0.0030 | 0.00025 | 1 | 03/02/15 10:08 | 03/02/15 17:12 | 7440-43-9 | |
| Potassium | ND | mg/L | 2.5 | 1.2 | 1 | 03/02/15 10:08 | 03/02/15 17:12 | 7440-09-7 | |
| **6020 MET ICPMS** | Analytical Method: EPA 6020 Preparation Method: EPA 3020 | | | | | | | | |
| Arsenic | **0.00026** | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 13:22 | 7440-38-2 | J |
| Selenium | ND | mg/L | 0.00050 | 0.00025 | 1 | 03/03/15 11:24 | 03/03/15 13:22 | 7782-49-2 | |
| **300.0 IC Anions** | Analytical Method: EPA 300.0 | | | | | | | | |
| Chloride | ND | mg/L | 1.2 | 0.60 | 1 | | 02/28/15 01:32 | 16887-00-6 | |
| Fluoride | **0.0090** | mg/L | 0.050 | 0.0060 | 1 | | 02/28/15 01:32 | 16984-48-8 | J |
| Nitrate as N | ND | mg/L | 0.10 | 0.050 | 1 | | 02/28/15 01:32 | 14797-55-8 | |
| Sulfate | ND | mg/L | 1.2 | 0.60 | 1 | | 02/28/15 01:32 | 14808-79-8 | |
| **350.1 Ammonia** | Analytical Method: EPA 350.1 | | | | | | | | |
| Nitrogen, Ammonia | ND | mg/L | 0.040 | 0.020 | 1 | | 03/05/15 12:38 | 7664-41-7 | |
| **Phosphate, Ortho Low Level** | Analytical Method: SM 4500-P E | | | | | | | | |
| Orthophosphate as P | **0.0087** | mg/L | 0.0050 | 0.0025 | 1 | | 02/27/15 16:06 | | |